TACOM

Lethality, Survivability, Mobility and Sustainment for America's Army

Leadership
Teaming
Communication
Employee Support
Strategic Thinking
Organizational Climate

# ARMY PETROLEUM CENTER

Briefer: COL Mel Frazier
Director

**02 April 2004**

# MISSION

Leadership
Teaming
Communication
Employee Support
Strategic Thinking
Organizational Climate

**READINESS**

**Provide Army-wide support as Fuels Service Control Point**

**UNITS**

**Facilitate automated systems with Army supply and financial systems**

**FACILITIES**

**Assist units when and where required for proper functioning and readiness of tactical and facility level fuel systems**

**DISTRIBUTION**

**Provide installation level support of bulk fuel requirements and coal**

**QUALITY**

**Test petroleum products and coal accurately in support of customers' requirements**

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# ARMY SERVICE CONTROL POINT

## ARMY'S REPRESENTATIVE TO THE JOINT COMMUNITY

### ARMY ENERGY OFFICE IS GONE—APC PROVIDES TECHNICAL EXPERTISE IN SUPPORT TO THE G-4

### COLOCATED WITH THE USAF, AND USN / USMC SERVICE CONTROL POINTS IN DESC

### REPRESENT G-4 ON THE CSG FOR EXECUTIVE AGENCY FOR POL

### OVERSEE MILCON PROJECTS

Leadership
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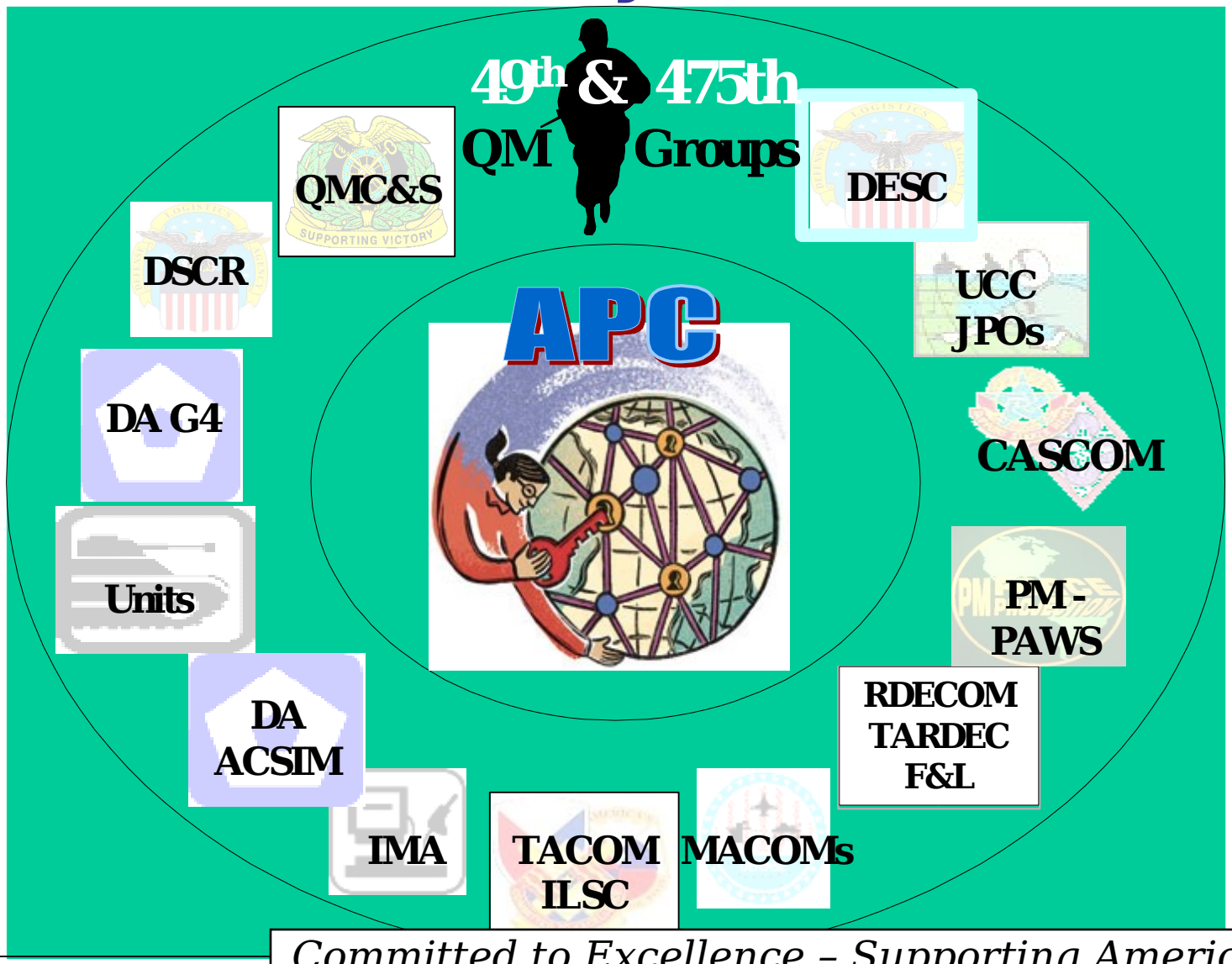
Organizational Clima

# Our Community and Customers



# SUPPORT TO THE FIELD

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- TECHNICAL ASSISTANCE VISITATION PROGRAM
- FORSCOM/TRADOC ARMS TEAMS
- NGB CLRT
- WAR RESERVE ASSESSMENTS

EYES AND EARS OF POL COMMUNITY

VOICE OF THE SOLDI

APC REPS HAVE TRAVELED TO KUWAIT, IRAQ, HONDURAS, EGYPT, PACOM, EUCOM AND THROUGHOUT CONUS ASSISTING UNITS PREPARING TO DEPLOY TO KUWAIT AND AFGHANISTAN

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# PRODUCT ASSURANCE

## FUELS—OILS—COAL

- OVER 7,000 SAMPLES PER YEAR
- 55,000 TEST—MAINLY FILTER EFFECTIVENESS
- OIF JP-8 LUBRICITY ISSUES
- EST PRIORITY OF FUEL USE BY TYPE IN OIF AND OEF

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# DESC FUELS CAPITALIZATION

Leadership
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- OVER 200 ARMY SITES WORLDWIDE ARE CAPITALIZED
  - ARMY PAYS FOR FUEL WHEN ISSUED TO USER
  - ELIGIBLE FOR SUSTAINMENT, RESTORATION AND MODERNIZATION FUNDING FROM DLA

**$25M ANNUALLY SINCE FY96**

- RECEIPTS, INVENTORY AND SALES ARE
  - CAPTURED VIA THE FUELS AUTOMATED
  - SYSTEM (FAS)
- USED AT INSTALLATIONS—TRAINING AND
  - COMPUTERS PROVIDED BY DESC
- NEED TO TRAIN SOLDIERS AND
- DEPLOY FAS
- TO TACTICAL FUEL SITES

**$80M DUE TO ARMY**

# Working Actions at APC

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Organizational Climate

- Army Campaign Plan
- Bulk Fuel Capitalization/FAS
- Fuel Bags
- MILCON & MRE Projects Funding
- Tactical Labs—QA/QS--Additives
- Facility Assessments & Privatization
- J P8 +100 and Alternative Fuels
- Support to Army Prepo Ships
- DOD Core Steering Group
- Executive Agent Representation
- New equipment/future technologies

# Providing Bulk Petroleum Distribution

Leadership
Teaming
Communication
Employee Support
Strategic Thinking
Organizational Climate

## Today

**Inland Petroleum Distribution System (IPDS)**

## 2010

**Rapidly Installed Fuel Transfer System (RIFTS)**

# WHY RIFTS NOW?

Leadership
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Communication
Employee Support
Strategic Thinking
Organizational Climate

## Speed of Combat Forces

- IPDS is too slow, resource intensive, not flexible
- IPDS successful during OIF because:
  - Pre-positioned IPDS equipment
  - Dedicated engineer support to construct
  - TIME to construct prior to combat – 2 months

## Reduces engineering requirements

- RIFTS employment by QM troops
- Eliminate engineer specific IPDS training
- Reduces requirements for limited engineer assets during war

## IPDS equipment aging

- Availability of repair parts
- Pump manufacturer out of business
- Unique Cummins Engine – (electronic controlled fuel system)

# RIFTS Conduit Deployment and Retrieval

- Deploy at 20 miles per day
- Retrieve at 10 miles per day
- Reduce strategic lift by 50%
- Reduce personnel by 50%

- Prototype demonstration April-May 02 at Fort Pickett, VA
- 2 Deployment/Retrieval Devices

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# RIFTS vs IPDS

- Reduced logistics footprint
- Limitations of IPDS
- Changing fuel support mission
- Opportunities for new capabilities
- Technology advancements

PLS Trucks moving some of the over **1,350** IPDS Pipeline and TPT containers

**ONE TEAM - Committed to Soldiers!**

# Comparison - RIFTS / IPDS / USMC
## 390 mile requirement

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| | RIFTS | IPDS | USMC |
|---|---|---|---|
| **Total Requirement**<br>Footprint - 20' ISO Containers | 507 | 1248 | 2856<br>Requires 2 // lines |
| **Conduit** | 390<br>Hose and Reel<br>20' ISO frame | 1014<br>Pipe | 195<br>2 hose and reel per 20' ISO frame |
| **Pump Stations (PS)** | 78<br>3/PS (26 PS) | 156<br>6/PS (26 PS) | 1116<br>6/PS (186 PS) |
| **Fittings and Support** | 39 | 78 | 117 |
| **Conduit psi** | 700-800 psi | 740 psi | 150 psi |
| **Deployment rate** | 20 miles/day<br>13 days | 2-3 miles/day<br>130 days | 20-30 miles/day<br>60 days |
| **Throughput** | 850 – 1,000K<br>Gallons/day | 720 – 864K<br>Gallons/day | 400-600K<br>Gallons/day |

**Army's throughput requirement is 720K gal per day**

***Legend***
= 500 ISO Containers

* New pumping stations will be lighter, smaller and more efficient then the current pumping stations used by both IPDS and MC system.
** IPDS pipeline requires an Engineer Pipeline Construction Co (166 soldiers) to employ & Petroleum Pipeline Terminal Operating Co to operate.

# Petroleum Quality Surveillance

Leadership
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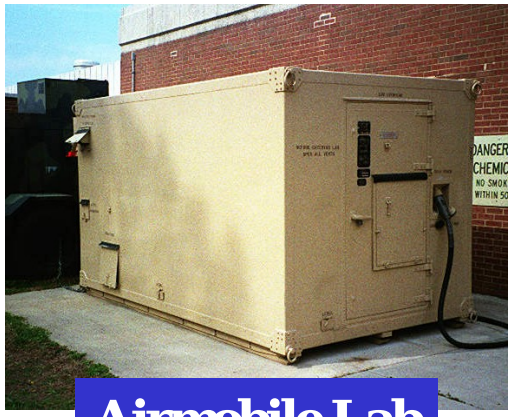
Employee Support
Strategic Thinking
Organizational Climate

## Today

Mobile Petroleum Lab



Airmobile Lab

## 2010

Petroleum Quality Analysis System

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# Fuels Testing Requirements

- Army JP-8, Jet A/A-1, TS-1, Diesel, Mogas, Avgas
- Navy/Marine JP-8, JP-5, F76, MGO, Mogas
- Air Force JP-8, Jet A/A-1, TS-1, AVGAS, Mogas, Diesel , JPTS

# OTHER TESTING REQUIREMENTS

- Procurement (A)
- Captured Fuel/Sabotage detection capability*
- Gasses Aviators Breathing Oxygen, Compressed Breathing Air, and Nitrogen
- Oil Analysis
- Bulk FSII
- Additional testing as directed (Sulfur for ULSD)
- JP-8 for Lubricity (BOCLE and Scuff Load testing)
- Other analyses (Fast-GC, RAPIDS, Mid and Near IR)*

* Under development

# Army User Requirements

- Ground Fuels
  - FE every 30 days on all Filter Separators
- Aviation Units
  - Initial Fill of collapsible tanks (B-1)
  - Initial Setup of aviation refuel site (Visual, API, Aqua-Glo, Fiber and Filter Membrane Color Rating)
  - Daily (Visual and Aqua-Glo)
  - Monthly (Filter Effectiveness)
- Additional testing if contamination is suspected (B-1)

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# Army TPT / FSSP

- Before receipt of single product ship or barge (Type C)
- Before receipt of multi-product ship or barge (B-1)
- After receipt from ship or barge (B-1 plus JFTOT)
- After receipt from dedicated source (Type C)
- After receipt from multi-product source (B-1)
- Stocks dormant for over 90 days (Type C, Filtration Time, FSII and Water reaction)
- Prior to pipeline or hose line shipment (Type C)
- Truck Loading Facility (Daily Type C)
- Filter Separators (Monthly FE)

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# Army Tactical JP-8 Testing Capability

- Aviation Fuel Contamination Test Kit (API, Aqua-Glo, Fiber, Filter Membrane Color Rating)
- Air Mobile Lab (Type C, Flash, FSII, Conductivity, Water Reaction, Gravimetric Millipore)
- Mobile Lab (B2, less Water by Karl Fischer, Viscosity, Acid Number, and Saybolt Color
- Base Lab (Capable of A testing/ 2 required/ 0 on hand/1 in development)
- Deployable Oil Analysis Lab

Leadership
Teaming
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Organizational Climate

# Air Force Testing Capability

- Base level testing for Particulates and filtration time, FSII, conductivity, flash point and free water by AEL.
- Deployable laboratory capable of performing B-1(plus JFTOT and BOCLE) testing of JP-8, JPTS, Comm JetA, and Comm JetA1.
- Deployable laboratory capable of performing B-1 testing of Diesel fuels (except Carbon residue)
- Deployable laboratory capable of performing B-1 and B-3 testing of Motor gasoline
- Deployable laboratory capable of performing B-1 testing of AVGAS (except Lean and Rich mixture rating)
- Deployable laboratory capable of performing Specification test on ABO, LN2, and compress breathing air.

# Conclusion

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- FE and B1 meet almost all the battlefield requirements
- A B2 capability is needed for captured fuels, suspected stocks and for technical evaluation
- Army Ground units need FE only
- Aviation Units need a FE, Aviation Fuels Contamination Test Kit, B2 Refractometer and an SDA meter

**Bottom Line: Replace the gravimetric FE with a test set and there is no Lab capability required in the combat zone**

Note: Currently there is no Army requirement for tracking FSII and SDA at user

# Current Lab Capabilities

Leadership
Teaming
Communication
Employee Support
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Organizational Climate

XXXX XXX XX X

COMBAT ZONE

**COMMUNICATIONS ZONE**

Contract Lab

Air Force Deployable Base Lab

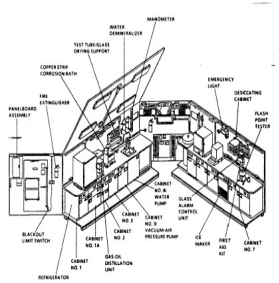
Modular Base Lab

**CORPS SUPPORT AREA**

Mobile Lab

**DIVISION SUPPORT AREA**

Aviation Fuel Contamination Test Kit



Air-Mobile Lab

**BRIGADE SUPPORT AREA**

XX X X X

# Today's UE/UA Lab Capabilities

Leadership
Teaming
Communication
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Strategic Thinking
Organizational Climate

## UEy

Contract Lab

Air Force Deployable Base Lab

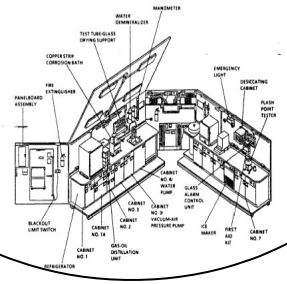
Mobile Petroleum Lab

Army Base Lab

## UEx

Aviation Fuel Contamination Test Kit

Support UA

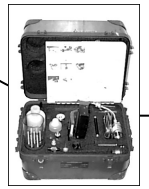


Air-Mobile Lab

## UA

Ground

Aviation



Aviation Fuel Contamination Test Kit

# Current Next Generation Lab Capabilities

## UEy

Contract Lab

PQSL

Air Force Deployable Base Lab

Modular Base Lab

## UEx

PTK

Support UA

PQAS

## UA

PTK

Ground

PTK

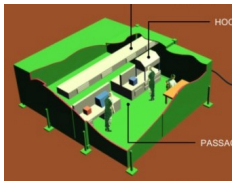
Aviation UA

# Proposed Next Generation Lab Capabilities

## UEy

Contract Lab

Air Force Deployable Base Lab



Army B2 Lab Capability

## UEx

PTK

Support UA

## UA

PTK

Ground UA

PTK

Aviation UA

Leadership
Teaming
Communication
Employee Support
Strategic Thinking
Organizational Climate

# Analysis Of Mobile Lab Capability (Tests)

21 Right Capability

20 Capability Needs Updating or Adding

39 Capability Not Needed

# Analysis Of Mobile Lab Capability

| Mobile Lab B2 Level Test Capability | | | | | | | | | v1.1 |
|---|---|---|---|---|---|---|---|---|---|
| Test | Test Method | Mobile Petroleum Laboratory | Aviation Turbine Fuels | TS-1 | DIESEL and Kerosene | MOGAS | AVGAS | Test To Be Deleted | Notes |
| | Appearance | X | X | X | X | X | X | | |
| | Color (Visual) | X | X | X | X | X | X | | |
| D 56 | Flash Point by Tag Closed Tester | X | X | X | | | | X | Remove do all with D-93 And/or D3828 Seta Flash |
| D 86 | Distillation of Petroleum Products | X | X | X | X | X | X | | Add Automated Unit remove one unit from Lab, keep one manual unit |
| D 91 | Precipitation Number of Lubricating Oils | X | | | | | | X | |
| D 92 | Flash and Fire Point by Cleveland Open Cup | X | | | | | | X | |
| D 93 | Flash Point by Penske-Martens Closed Tester | X | X | X | X | | | | or Automated ASTM D3828 Seta Flash Tester |
| D 94 | Saponification Number by Petroleum Products | X | | | | | | X | |
| D-95 | Water in Petroleum Products and Bituminous Materials by Distillation | X | | | | | | X | |
| D 97 | Pour Point of Petroleum Oils | X | | | X | | | | Replace with Electronic Cloud, Pour, CFPP (OCONUS), Freezing Point Apparatus |
| D 129 | Sulfur in Petroleum Products (General Bomb Method) | | | | X | | | X | Perform ASTM D4294 |
| D 130 | Detection of Copper Corrosion from Petroleum Products by the Copper Strip Tarnish Test | X | X | | X | X | X | | |
| D 156 | Saybolt Color of Petroleum Products (Saybolt Chromometer Method) | | X | | | | | X | Saybolt not required, REPORT ONLY |
| D 189 | Conradson Carbon Residue of Petroleum Products | X | | | | | | X | |
| D 217 | Cone Penetration of Lubricating Grease | X | | | | | | X | |
| D 287 | API Gravity of Crude Petroleum and Petroleum Products (Hydrometer Method) | X | | | | | | X | |
| D 322 | Gasoline Diluent in Used Gasoline Engine Oils by Distillation | X | | | | | | X | |
| D 323 | Vapor Pressure of Petroleum Products (Reid Method) | | | | | | | | Remove and replace with ASTM [illegible] aller) |

# Conclusions

- Revise SC to drop oils and lubes testing and upgrade to a B2 capability
- Recap/SLEP Mobile Labs
- Move all Mobile Labs into modular Lab Dets
- Reduce Labs from 2 (base) and 16 (mobile) to approximately 10~12 modular lab detachments
- Develop and field a B2 Lab capability to replace the mobile lab
- Once proven replace the Air Mobile Lab/ PQAS with the PTK

# Providing Mobile, Modular Bulk Petroleum Storage

Leadership
Teaming
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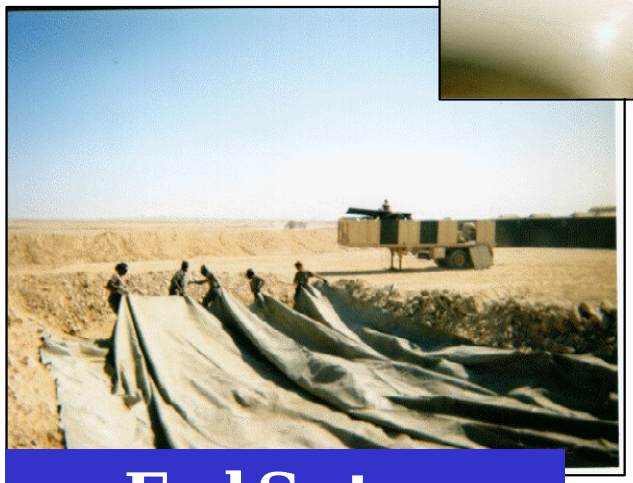
Organizational Climate

## Today



Fuel System Supply Point

## 2010

Modular Mobile Fuel Farm

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# OIF TACTICAL PETROLEUM TERMINALS

## TPT Development (210K fuel tanks)

| Location | #bags | 100% Capacity | *70% Usable Capacity |
|---|---|---|---|
| Truck Fill Stand (TFS) | 8 | 1.68 mil | 1.17 mil |
| Virginia TPT | 24 | 5.04 mil | 3.53 mil |
| Udairi TPT | 14 | 2.94 mil | 2.06 mil |
| BPW TPT | 30 | 6.30 mil | 4.41 mil |
| Cedar I TPT | 24 | 5.04 mil | 3.53 mil |
| Cedar II TPT | 24 | 5.04 mil | 3.53 mil |
| | **124** | **26 million** | **18.2 million** |

**= 7.77 million**
**(37 extra bags!)**

# 210K FUEL BAGS

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Organizational Climate

**96 BAGS FAILED**

**+ 37 DUE TO 70% RULE**

**133 EXTRA BAGS DUE TO POOR QUALITY**

$6.25M OF UNNECESSARY EXPENDITU

The clear area is the split seem

Reliance Tank 30
DOM - 9/97

# CHALLENGES:

Leadership
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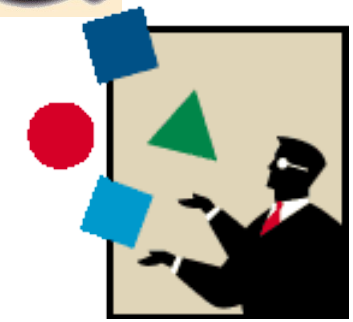

CAPITALIZE ON THE KEY PLAYERS IDEALS

SEE INTO THE FUTURE-- DOCTRINE, TRAINING, FORCE STRUCTURE, AUTOMATI NEW EQUIPMENT, TO&Es

PRIORITIZE ACTIONS AND SPEAK WITH ONE VOICE TO THE SENIOR LEADERSH

# LIQUID LOGISTICS

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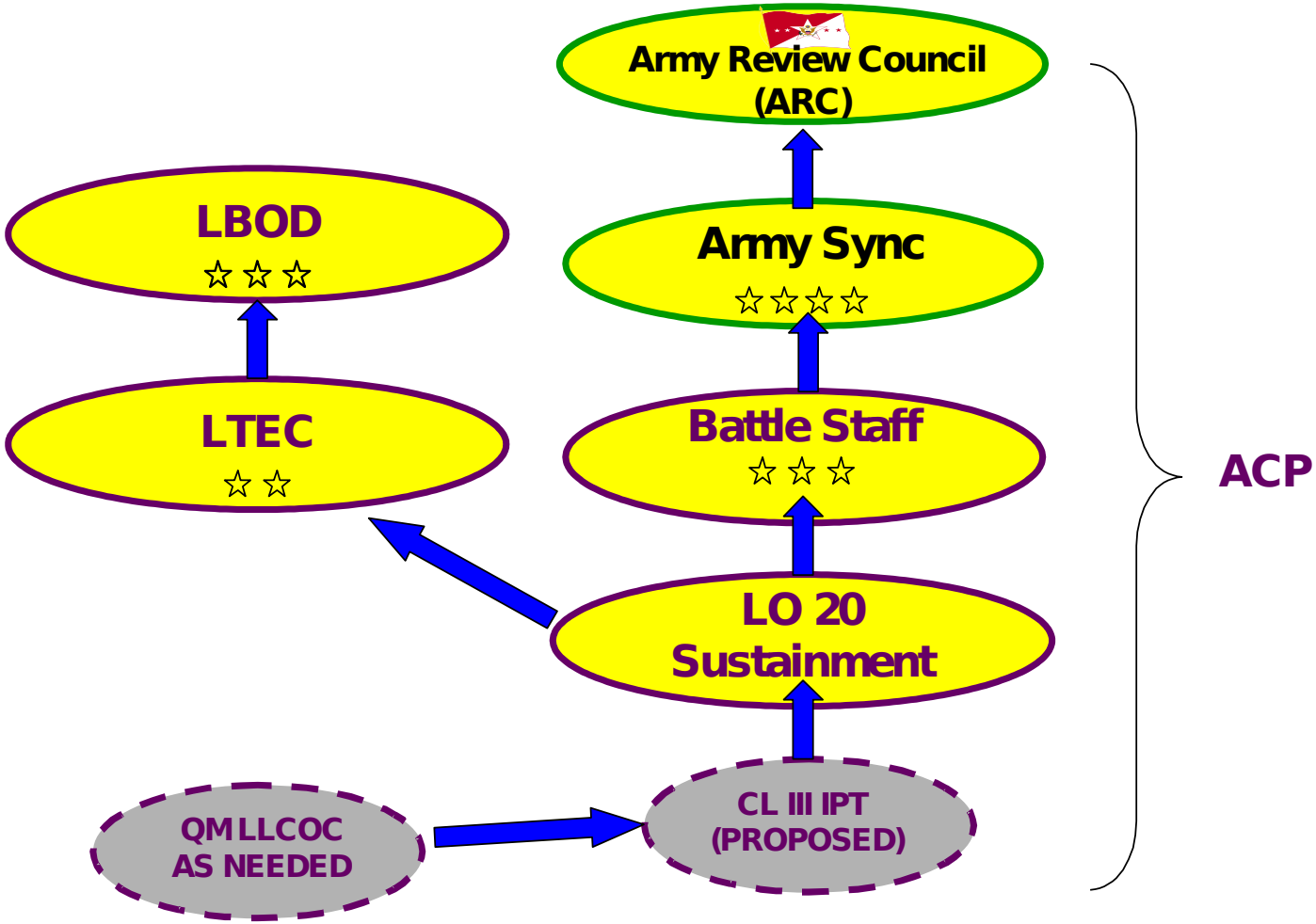
Organizational Climate



# Conclusions:

Leadership
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- ✓ We have a critical mission today and in the future
- ✓ We must plan and do joint petroleum support ops
- ✓ Don't ask what the Army can do for you,
  ask what you can do for the Future:
  - ✓ Enhanced fuel distribution training and doctrine
  - ✓ Support CSS transformation and wartime SPT
  - ✓ Support Executive Agent (DESC / Joint Services)
  - ✓ Work toward & test logistics transformation:

    G-4 / AMC / TACOM / QMC&S / CASCOM / Army

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Organizational Climate

EXPERTISE

QUALITY

# QUESTIONS ?

SERVICE

EQUIPMENT

**Web: usapc.army.mil**